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L7: Entry 1 of 10 File: USPT Jul 25, 2000

US-PAT-NO: 6093302

DOCUMENT-IDENTIFIER: US 6093302 A

TITLE: Electrochemical solid phase synthesis

DATE-ISSUED: July 25, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Montgomery; Donald D.	Millbrae	CA	N/A	N/A

US-CL-CURRENT: 205/122

IN: Montgomery; Donald D.

AB: A solid phase synthesis method for the preparation of diverse sequences of separate polymers or nucleic acid sequences using electrochemical placement of monomers or nucleic acids at a specific location on a substrate containing at least one electrode that is preferably in contact with a buffering or scavenging solution to prevent chemical crosstalk between electrodes due to diffusion of electrochemically generated reagents.

AS: Combimatrix Corporation, N/A

AP: 003075

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 2. Document ID: US 6005543 A

L7: Entry 2 of 10

File: USPT

Dec 21, 1999

US-PAT-NO: 6005543

DOCUMENT-IDENTIFIER: US 6005543 A

TITLE: Liquid crystal display device and method of driving the same

DATE-ISSUED: December 21, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kimura; Hiroyuki	Hyogo-ken	N/A	N/A	JPX

US-CL-CURRENT: 345/94; 345/90

IN: Kimura; Hiroyuki

AB: A liquid crystal display device includes an array substrate having a plurality of pixel electrodes in a matrix form, a counter substrate having a counter electrode opposed to the pixel electrodes, a liquid crystal layer including liquid crystal molecules disposed between the array and counter substrate, a first and second alignment layers, the first alignment layer disposed between the array substrate and the liquid crystal layer, the second alignment layer disposed between the counter substrate and the liquid crystal layer, and each of which are treated so as to give a predetermined pre-tilt angle to the liquid crystal molecules, and a shield electrode disposed a region applied a lateral electric field which is against to a direction of the pre-tilt angle. A potential difference between the shield electrode and the counter electrode is adjusted to a first potential difference during a first period, and the potential difference between the shield electrode and the counter electrode is adjusted to a second potential difference, which is smaller than the first potential difference, during a second period continuing after the first period so as to apply an alternating current voltage between the counter electrode and the shield electrode.

AS: Kabushiki Kaisha Toshiba, N/A

AP: 023711

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 3. Document ID: US 5929208 A

L7: Entry 3 of 10

File: USPT

Jul 27, 1999

US-PAT-NO: 5929208

DOCUMENT-IDENTIFIER: US 5929208 A

TITLE: Methods for electronic synthesis of polymers

DATE-ISSUED: July 27, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Heller; Michael J.	Encinitas	CA	N/A	N/A
Tu; Eugene	San Diego	CA	N/A	N/A

US-CL-CURRENT: 530/333, 422/129, 422/131, 422/134, 422/50,  
422/62, 422/68.1, 422/69, 422/82.05, 435/283.1, 435/285.1,  
435/285.2, 435/286.1, 435/286.2, 435/287.1, 435/287.2, 435/287.9,  
435/288.3, 435/289.1, 435/299.1, 435/305.1, 435/DIG.49, 530/334,  
536/25.3

IN: Heller; Michael J., Tu; Eugene

AB: A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid hybridization, antibody/antigen reaction, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques. The device can electronically control the transport and attachment of specific binding entities to specific micro-locations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific micro-locations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA hybridization reactions, and improve the detection of analytes. The device can be electronically replicated.

AS: Nanogen, Inc., N/A

AP: 725976

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMC	Draw Desc	Image
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☐ 4. Document ID: US 5632957 A

L7: Entry 4 of 10

File: USPT

May 27, 1997

US-PAT-NO: 5632957

DOCUMENT-IDENTIFIER: US 5632957 A

TITLE: Molecular biological diagnostic systems including electrodes

DATE-ISSUED: May 27, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Heller; Michael J.	Encinitas	CA	N/A	N/A
Tu; Eugene	San Diego	CA	N/A	N/A
Butler; William F.	Carlsbad	CA	N/A	N/A

US-CL-CURRENT: 422/68.1, 422/50, 422/52, 422/55, 422/56, 422/61,  
422/62, 422/63, 422/67, 422/69, 422/81, 422/82.01, 422/82.02,  
422/82.03, 422/82.04, 422/82.05, 435/173.1, 435/6, 435/7.1,  
436/501, 536/22.1, 536/23.1, 536/24.1

IN: Heller; Michael J., Tu; Eugene, Butler; William F.

AB: A system for performing molecular biological diagnosis, analysis and multi-step and multiplex reactions utilizes a self-addressable, self-assembling microelectronic system for actively carrying out controlled reactions in microscopic formats. These reactions include most molecular biological procedures, such as nucleic acid hybridization, antibody/antigen reaction, and clinical diagnostics. Multi-step combinatorial biopolymer synthesis may be performed. A controller interfaces with a user via input/output devices, preferably including a graphical display. Independent electronic control is achieved for the individual microlocations. In the preferred embodiment, the controller interfaces with a power supply and interface, the interface providing selective connection to the microlocations, polarity reversal, and optionally selective potential or current levels to individual electrodes. A system for performing sample preparation, hybridization and detection and data analysis integrates multiple steps within a combined system. Charged materials are transported preferably via free field electrophoresis. DNA complexity reduction is achieved preferably by binding of DNA to a support, followed by cleaving unbound materials, such as by restriction enzymes, followed by transport of the cleaved DNA fragments. Active, programmable matrix devices are formed in a variety of formats, including a square matrix pattern with fanned out electrical connections, an array having electrical connections and optionally optical connections from beneath the specific microlocations. A highly automated DNA diagnostic system results.

AS: Nanogen, N/A

AP: 304657

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 5. Document ID: US 5603351 A

L7: Entry 5 of 10

File: USPT

Feb 18, 1997

US-PAT-NO: 5603351

DOCUMENT-IDENTIFIER: US 5603351 A

TITLE: Method and system for inhibiting cross-contamination in fluids of combinatorial chemistry device

DATE-ISSUED: February 18, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cherukuri; Satyam C.	Cranbury	NJ	N/A	N/A
Demers; Robert R.	Cranbury	NJ	N/A	N/A
Fan; Zhong H.	Middlesex	NJ	N/A	N/A
Levine; Aaron W.	Lawrenceville	NJ	N/A	N/A
McBride; Sterling E.	Lawrence Township, Mercer County	NJ	N/A	N/A
Zanzucchi; Peter J.	West Windsor Township, Mercer,	NJ	N/A	N/A County

US-CL-CURRENT: 137/597; 204/269, 204/600, 204/601

IN: Cherukuri; Satyam C., Demers; Robert R., Fan; Zhong H., Levine; Aaron W., McBride; Sterling E., Zanzucchi; Peter J.

AB: A system and method for accomplishing a plurality of combinatorial processes in parallel comprising a microelectronic and fluidic array (device array) having micron-sized reservoirs, connecting microchannels and reaction cells etched into a substrate. The device array is supported by a station which serves to interface and perform electro-optic measurements of material in the reaction cells of the device array. The device array incorporates a modular configuration with three distinct layers or plates. The device array comprises a top feedthru plate, a center distribution plate and a bottom cell plate. The three plates are stacked vertically and coupled together to form a liquid-tight seal. Reservoirs, microchannels and reactions cells are controllably etched onto the plates using traditional semiconductor fabrication techniques. The top feedthru plate serves as a cover for the device array and contains apertures selectively positioned above the reservoirs located in the center distribution plate. The center distribution plate comprises a plurality of micron sized reservoirs, microchannels, reservoir feeds, cell feeds and overflow feeds for the distribution of reagent fluids to the reaction cells located in the bottom cell plate. The detachable bottom cell plate serves as a microlaboratory tray of reaction cells. Once the proper reagents or other materials are introduced into the reaction cells, the bottom cell plate is decoupled from the device array and removed for incubation or analysis.

AS: David Sarnoff Research Center, Inc., N/A

AP: 483331

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 6. Document ID: US 5276538 A

L7: Entry 6 of 10

File: USPT

Jan 4, 1994

US-PAT-NO: 5276538

DOCUMENT-IDENTIFIER: US 5276538 A

TITLE: Display device with micro lens array

DATE-ISSUED: January 4, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Monji; Hideto	Osaka	N/A	N/A	JPX
Kuribayashi; Kiyoshi	Neyagawa	N/A	N/A	JPX
Umetani; Makoto	Izumi	N/A	N/A	JPX

US-CL-CURRENT: 349/95; 349/84, 359/454, 359/620, 359/642

IN: Monji; Hideto, Kuribayashi; Kiyoshi, Umetani;  
Makoto

AB: An array of optical microelements is produced by press molding, at a high temperature, a transparent glass with a press mold which has a molding surface formed into a shape corresponding to the optical microelement array and coated with a chemically stable thin film.

AS: Matsushita Electric Industrial Co., Ltd., N/A

AP: 678155

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 7. Document ID: US 5114674 A

L7: Entry 7 of 10

File: USPT

May 19, 1992

US-PAT-NO: 5114674

DOCUMENT-IDENTIFIER: US 5114674 A

TITLE: Added array of molecular chains for interfering with electrical fields

DATE-ISSUED: May 19, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stanbro; William D.	Columbia	MD	N/A	N/A
Hunter, Jr.; Kenneth W.	Potomac	MD	N/A	N/A
Newman; Arnold L.	Kensington	MD	N/A	N/A

US-CL-CURRENT: 422/57; 204/403, 422/82.02, 436/525

IN: Stanbro; William D., Hunter, Jr.; Kenneth W.,  
Newman; Arnold L.

AB: An array of molecular chains is added to a dielectric material between two electrodes of a capacitive affinity sensor. Such an array of molecular chains greatly changes dielectric properties between the two electrodes to greatly enhance sensitivity of the sensor. In a sensor using direct binding, a viral fragment is bound to the sensor's surface. A molecular chain, comprising an anti-viral antibody, an anti-human antibody, and a protein molecule, binds to the viral fragment. In a sensor using competitive binding a hapten is bound to the sensor's surface. A molecular chain, comprising an antibody with attached aliphatic hydrocarbons, binds to the hapten. A free analyte competes with the hapten to bind with the antibody.

AS: Biotronic Systems Corporation, N/A

AP: 044767

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 8. Document ID: US 5082627 A

L7: Entry 8 of 10

File: USPT

Jan 21, 1992

US-PAT-NO: 5082627

DOCUMENT-IDENTIFIER: US 5082627-A

TITLE: Three dimensional binding site array for interfering with an electrical field

DATE-ISSUED: January 21, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stanbro; William D.	Columbia	MD	N/A	N/A

US-CL-CURRENT: 422/82.01; 204/403, 324/658, 324/663, 324/686, 422/68.1, 422/69, 422/70, 422/90, 422/98, 427/2.11, 427/79, 427/80, 427/81, 435/287.2, 435/287.9, 435/819, 436/525, 436/528

IN: Stanbro; William D.

AB: A dielectric material of a capacitive affinity sensor has a three-dimensional molecular binding site array. A glass base is layered with a binding agent like silane from which a polymeric backbone like polylysine extends. The polymeric backbone is prepared to accept receptor molecules like cortisol hemisuccinate to bind a specific antibody. Such an array changes dielectric properties between the two electrodes of the capacitive affinity sensor to greatly enhance sensitivity of the sensor.



AS: Biotronic Systems Corporation, N/A

AP: 044761

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 9. Document ID: US 5066372 A

L7: Entry 9 of 10 File: USPT Nov 19, 1991

US-PAT-NO: 5066372

DOCUMENT-IDENTIFIER: US 5066372 A

TITLE: Unitary multiple electrode sensor

DATE-ISSUED: November 19, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Weetall; Howard H.	Sharon	MA	N/A	N/A

US-CL-CURRENT: 205/777.5; 204/403, 204/412, 205/337, 435/14,  
435/25, 435/7.7, 435/7.92, 435/817, 436/518, 436/532, 436/535,  
436/806

IN: Weetall; Howard H.

AB: A unitary multiple electrode sensor for detecting analytes in test samples and devices for using them. The unitary multiple electrode sensor includes a sensor support member and at least one electrode array being deposited on the sensor support member, the electrode array having sensor-activating chemical(s) attached to an embodiment thereof. A test sample is applied to the electrode array to begin the test; and a sensor apparatus measures the test reaction which is occurring on the electrode array.

AS: Ciba Corning Diagnostics Corp., N/A

AP: 541566

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 10. Document ID: US 4963245 A

L7: Entry 10 of 10 File: USPT Oct 16, 1990

US-PAT-NO: 4963245

DOCUMENT-IDENTIFIER: US 4963245 A

TITLE: Unitary multiple electrode sensor

DATE-ISSUED: October 16, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Weetall; Howard H.	Sharon	MA	N/A	N/A

US-CL-CURRENT: 204/403; 204/412, 435/14, 435/25, 435/7.1, 435/817, 436/518, 436/532, 436/535, 436/806

IN: Weetall; Howard H.

AB: A unitary multiple electrode sensor for detecting analytes in blood or blood component samples and devices for using them. The unitary multiple electrode sensor includes a sensor support member and at least one electrode array being deposited on the sensor support member, the electrode array having sensor-activating chemical(s) attached to an embodiment thereof. A test sample is applied to the electrode array to begin the test; and a sensor apparatus measures the test reaction which is occurring on the electrode array.

AS: Ciba Corning Diagnostics Corp., N/A

AP: 492369

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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